Delaware Bay's Dynamic Benthic Habitat

Benthic habitats, and their living resources, comprise ~21% of our entire State!

What is a Benthic habitat?

The term ***benthic*** refers to anything associated with or occurring on the bottom of a body of water. The animals and plants that live on or in the bottom are known as the benthos. Benthic habitats can best be defined as bottom environments with distinct physical, geochemical, and biological characteristics. Benthic habitats vary widely depending on their location and depth, and they are often characterized by dominant structural features and biological communities.

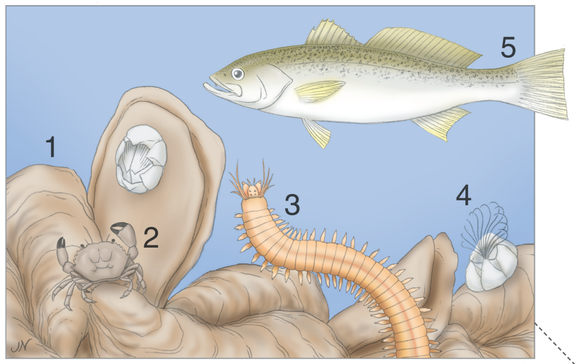
Our Bay is dominated by estuarine and nearshore benthic habitats that are highly diverse in their physical characteristics. They include shallow submerged mudflats, rippled sandflats, rocky hard-bottom habitats, silty and sandy shoals, shellfish beds, and tube worm reefs.

Why is it important?

Estuarine and nearshore benthic habitats support a wide diversity of marine life by providing spawning, nursery, refuge, and foraging grounds for fish species. They function in nutrient cycling and contribute to the removal of contaminants from the water column. Benthic organisms are also important members of the lower food web, consuming organic matter and phytoplankton and serving as food sources for higher level consumers.

Benthic habitat:

- Has three-dimensional structures that serve as shelter and provide storm protection by buffering wave action along coastlines. It also provides a complex environment for smaller creatures to hide in and/or attach to—and these areas may serve as valuable feeding areas for many larger species.
- Is essential in maintaining water quality and provides a good indicator of health in estuarine ecosystems.
- Plays a critical role in the breakdown of organic matter through the actions of scavengers, deposit-feeders, and bacteria.
- Serves as important food sources for many species of fish, shellfish, and birds.



OYSTER REEF

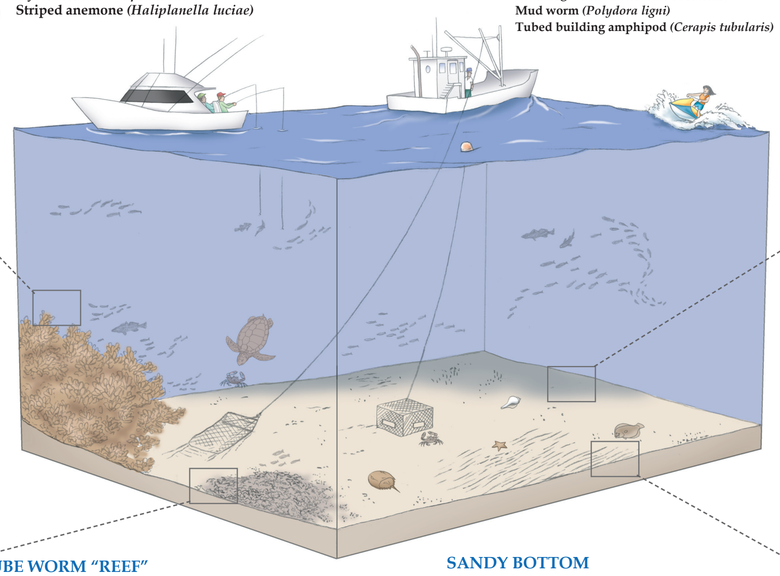
1. **Eastern oysters** *(Crassostrea virginica)*
2. **Black-fingered mud crabs** *(Eurypanopeus depressus)*
3. **Clam worms** *(Nereis sp.)*
4. **Ivory barnacles** *(Balanus eburneus)*
5. **Weakfish** *(Cynoscion regalis)*

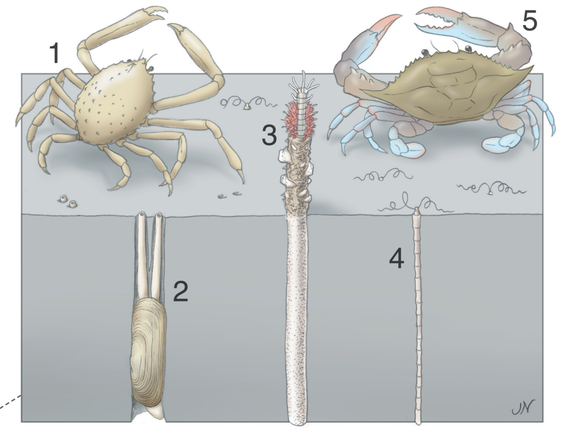
Common shore shrimp *(Palaemonetes vulgaris)*
Oyster drill *(Urosalpinx cinerea)*
Oyster toadfish *(Opsanus tau)*
Striped anemone *(Haliplanella luciae)*

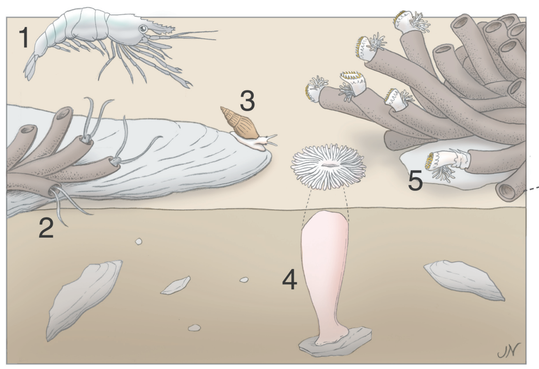
MUDDY (SOFT) BOTTOM

1. **Common spider crab** *(Libinia emarginata)*
2. **Stout tagelus/stout razor** *(Tagelus plebeius)*
3. **Plumed worm** *(Diopatra cuprea)*
4. **Glassy tube worms** *(Spiochaetopterus costarum)*
5. **Blue Crab** *(Callinectes sapidus)*

Fragile surf clams *(Mulinia lateralis)*
Gem shells *(Gemma gemma)*
Mud dog whelk *(Nassarius obsoletus)*
Mud worm *(Polydora ligni)*
Tubed building amphipod *(Cerapis tubularis)*







TUBE WORM "REEF"

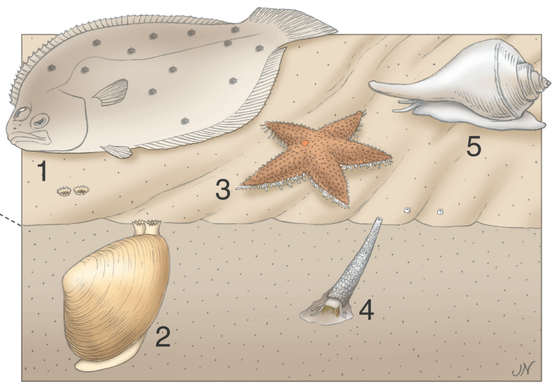
1. **Common shore shrimp** *(Palaemonetes vulgaris)*
2. **Mud worm** *(Polydora ligni)*
3. **Greedy dove snail** *(Anachis avara)*
4. **Burrowing anemones** *(Actinothoe modesta)*
5. **Sand-builder worm** *(Sabellaria vulgaris)*

Black sea bass *(Centropristis striata)*
Black-fingered mud crabs *(Eurypanopeus depressus)*
Flat-clawed hermit crabs *(Pagurus pollicaris)*
Limey tube worm *(Hydroides dianthus)*

SANDY BOTTOM

1. **Summer Flounder** *(Paralichthys dentatus)*
2. **Surf clams** *(Spisula solidissima)*
3. **Sea Star** *(Asterias forbesii)*
4. **Trumpet worm** *(Pectinaria gouldii)*
5. **Channel whelk** *(Busycon canaliculatum)*

Common Razor Clam *(Ensis directus)*
Common spider crab *(Libinia emarginata)*
Flat-clawed hermit crabs *(Pagurus pollicaris)*
Knobbed whelk *(Busycon carica)*



Illustrations by John Norton.

What are we doing to better understand the benthic habitat in the Delaware Bay?

The Delaware Coastal Programs group of DNREC's Division of Soil and Water Conservation is working closely with several universities, state and federal agencies, and nonprofit organizations to carry out a bottom and sub-bottom imaging project to identify and map the benthic habitat and sub-bottom sediments of Delaware Bay and River. This collaborative project was initiated to better understand the distribution of bottom sediment types, habitat, biodiversity, and—most importantly—the impact of human activity upon the Bay bottom and its living resources.

The Delaware Bay Benthic Mapping Project (DBBMP) will help to unlock many of the secrets of the Bay's most important biological resources and habitat affinities. The project will achieve this by mapping a total of 120 square miles of oyster habitat in Delaware waters, sturgeon habitat in the Delaware River, horseshoe crab habitat along the Delaware shelf between Pickering Beach and Breakwater Harbor—and characterize the Benthic habitat for many other important species.

For more information, please contact:
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